

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Background**

Lately, everyone is already familiar with the technology of three-dimensional (3D). Three-dimensional animation is one of the field in computer techniques which develop rapidly. A wide variety of techniques and algorithms have been developed in this field. Further, starting from 3D animation, now comes a new technology called Augmented Reality (AR). Augmented Reality (AR) is a technology that can describe and incorporate the real world and the virtual world that is made through a computer so that the boundary between the two becomes very thin. Augmented Reality (AR) is a variation of the Virtual Environment (VE) or often called the Virtual Reality (VR). Augmented Reality in general definition was described by Ronald Azuma in 1997 which combines real world and virtual world, and interact in real time in 3D. The technology of Augmented Reality is slowly but sure has been spread to many aspects of life. This is because the use of AR is very exciting and allows users being easier in doing something, for example in delivering a material like a presentation in learning process or in a game. Therefore, it is considered for education to start using AR as a medium of learning.

Education in Indonesia is guided by a new curriculum called Curriculum 2013, to run this Curriculum, the role of parents is very essentials to support student learning activities especially at home. Therefore, some various ways of learning build to improve students understanding the material. One of the material in this curriculum is

about "Indahnya Kebersamaan" with the sub-chapter material called "Keberagaman Budaya Bangsaku", however, the material is only presented a map of Indonesia with the view point for every culture and the numbering sequence, then the students are required to know about the culture displayed in the map, it makes the children is difficult to understand the material and lead to saturation in the learning process, it also make student to imagine the figure of Indonesian traditional weapons.

Reflecting on the problems arising from the curriculum of 2013, researchers set up a learning method by combining AR with Educational game in presenting the material of Indonesian culture diversity, especially for traditional weapons. The researchers using the traditional weapons as a main point for the game material because it will be more interesting for children. Traditional weapons also has its own history that symbolize the region. So using that game material researchers can represent the material about Indonesian cultural diversity and make children more interested with the study material. The material also will be visualized into 3D with AR support to make it look real and give a positive enthusiasm for the children. In addition, the use of android could help parents took part in the learning process because there is no time limit in accessing this educational game.

## **1.2 Problem Statement**

Based on the background described above, namely "How to create an interactive educational game that can pack the Indonesian cultural diversity of learning materials especially for traditional weapons based on the latest 2013 curriculum on elementary school level by using augmented reality?"

### 1.3 Limitation

In providing appropriate referrals for writers in realizing this study, it is felt necessary to provide boundary problems given the ability of the author who is still not expert in order to prevent the widening of the main issues in research. The extent of the problem in question is:

1. Applications that created was a learning media for fourth grade elementary school, that the content was adopted from the fourth grade curriculum in 2013, with theme "Indahnya Kebersamaan" with the sub-theme "Keberagaman Budaya Bangsaku", with the main content Indonesian traditional weapons.
2. The application running using an image detection that used as a marker to display the 3D shape of Indonesian traditional weapons. Marker built using the SDK vuforia, while for the application is created using Unity3D.
3. The application only represent 6 traditional weapons in 6 regions.
4. The information that presented was a depiction of Indonesian traditional weapons with 3D AR modeling, while the specific information about the specific traditional weapons will be displayed.
5. Application that developed have a main priority to the use of augmented reality (AR).
6. The developed application only run on android devices and its contain several pages:
  - a. Main Page
  - b. Author Page
  - c. Encyclopedia Page
  - d. Story Scene
  - e. Map Level Scene

- f. Game Scene
- g. AR Scene

#### **1.4 Objective**

This study aims to build and develop an educational game themed the introduction of the Indonesian culture diversity especially for traditional weapons, which is useful in learning the latest curriculum of elementary school in 2013 with the implementation of Augmented Reality.

#### **1.5 Benefit**

The expected benefits of this research:

1. Help students learn the diversity of Indonesian culture. In addition, students also get an idea about the kind of traditional weapons that exists because of the 3D visualization of the traditional weapons, and also help teachers in presenting the material to students.
2. Provide an overview of the development of a learning system in educational institutions. And can help parents teach their child when they in home, because the application can be accessed using a smartphone so it can be accessed any time.

## **1.6 Writing Systematical**

Systematic writing thesis contains a description from contents of the thesis outline are:

### **CHAPTER 1 INTRODUCTION**

Introduction chapter describe background of the study, problem statement, limitation of the study, objective of the study, and writing systematical.

### **CHAPTER 2 LITERATURE REVIEW**

Chapter 2 contains theories that used in research, design, and manufacturing system.

### **CHAPTER 3 RESEARCH METHOD**

Chapter 3 Analysis point of research object, all problem, and system design in general or specific.

### **CHAPTER 4 RESULTS AND DISCUSSION**

Chapter 4 exposing conclusion of the stage research result, starting from design, analysis, testing, and implementation result.

### **CHAPTER 5 CONCLUSION**

Chapter 5 describe the conclusion of research and suggestion for considering in the future research.